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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/788,470	REINSMA ET AL.	
	Examiner	Art Unit	
	Scott L. Jarrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2001 and 03 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-92* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-92* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02/21/01* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The drawings are objected to because Figures 1, 4A and 5A are illegible. Examiner suggests labels be added to Figure 3 to increase its readability. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be

notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Abstract

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract

on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

5. The abstract of the disclosure is objected to because it is longer than 150 words. Correction is required. See MPEP § 608.01(b).

Specification

6. The amendment filed November 3, 2004 has been accepted, with one correction as discussed below, by Examiner and is the basis for this office action. Examiner interpreted the request to add two new paragraphs relating to Figures 7A and 7B to page 5, line 14 to intend to read page 3, line 22. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312.

7. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

8. The attempt to incorporate subject matter into this application by reference to Grefenstette et al. (Page 8, Lines 33-35), Van Nostrtand Reinhold (Page 9, Lines 1-3), Sutton et al. (Page 9, Line 21), Dorigo M. (Page 9, Lines 21-22) and Miagkikh et al.

(Page 9, Lines 25-27) is improper without providing complete copies of the references cited and providing an Information Disclosure Statement listing references.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over SOLAR-5 Energy Simulation Engine (as a stand alone product, 1976 and 2000, and simulation engine for Home Energy Efficient Design (HEED, 2001) and Residential Energy Efficient Design (REED, 1999), as evidenced by Architecture + Urban Design, UCLA School of Arts and Architecture Internet Site, Milne M. et al, Designing a sustainable library for Oak Park: Modeling air pollution and energy performance (1997), Milne M., Building Energy Design Tool that Draws Pictures of Thermal Performance (1984), Milne, M. et al., An internet tool for designing energy efficient homes (1999) and Milne M. et al., A Drag-and-Drop Energy Design Tool (2001) and further in view of ENERGY as evidenced by Pittman J.H. et al., An Interactive Graphics Environment for Architectural Energy Simulation (1982) and Grewal N., ENERGY: A computer program for calculation energy consumption in residential buildings (1998).

Regarding Claims 1, 2, 6, 13-14, 30, 33-34, 42-45, 58, 61, 66, 71, 77-78 and 90 SOLAR-5 teaches a building performance evaluation system (environment, simulation tool, energy design tool) developed at the University of California at Las Angeles (UCLA) that enables the user to analyze and predict a building's energy performance (Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Introduction). SOLAR-5 further teaches that the building performance evaluation system enables users to test various designs and make energy efficient building design decisions based on a plurality of building design parameters and the interactions among the building parameters (Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Introduction)

SOLAR-5 further teaches that the building performance evaluation system:

- receives building descriptions and plurality of other project information (parameters) including but not limited to: building materials and systems (walls, windows, insulation, roofs, air conditioners, furnaces, etc.), building geometries (floor plan, window layout, etc.), building codes, weather conditions, sun path and energy rates (Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Figures 1-5; Sections 2.1-2.5, Pages 3-6);

- provides a means for reviewing and updating building parameters (Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Figures 1-3, and 6) as part building performance evaluation and design processes;

- designs a building to meet (comply with) an energy code (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figure 6, Page 5; Section 2.5 Energy Costs, Page 5);

- calculates (determines) and displays (plots) the energy performance of the building and its components (Architecture + Urban Design, UCLA School of Arts and Architecture Internet Site, Energy Design Tools; Milne M. et al., A Drag-and-Drop Energy Design Tool; Figure 6; Section 2.6 Advanced Data input and Evaluation Plots, Pages 5-6);

- displays the lowest cost building design (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figure 6);

- forms the core simulation engine for the Home Energy Efficient Design (HEED) system wherein HEED is a building performance evaluation system that provides a convenient and user friendly Graphical User Interface to the SOLAR-5 building performance evaluation system as shown below (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figures 1-3, and 6);

- HEED utilizes well known object-oriented programming languages Java and C++ (Milne M. et al., A Drag-and-Drop Energy Design Tool; Page 1, Column 2, Paragraph 4);

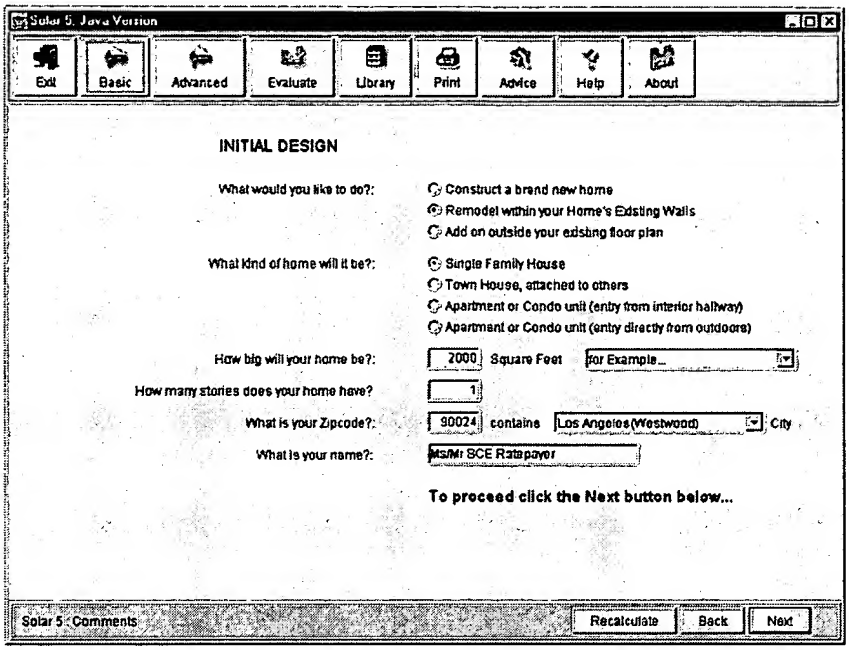

Figure 1: SOLAR-5/Heed Initial Design Screen Shot

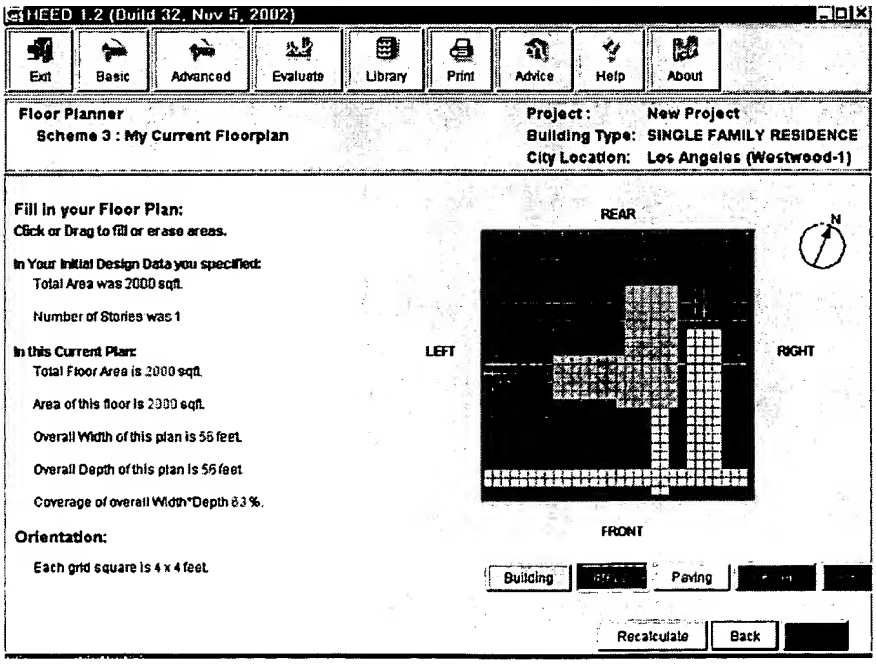

Figure 2: SOLAR-5/HEED Floor Planner Screen Shot

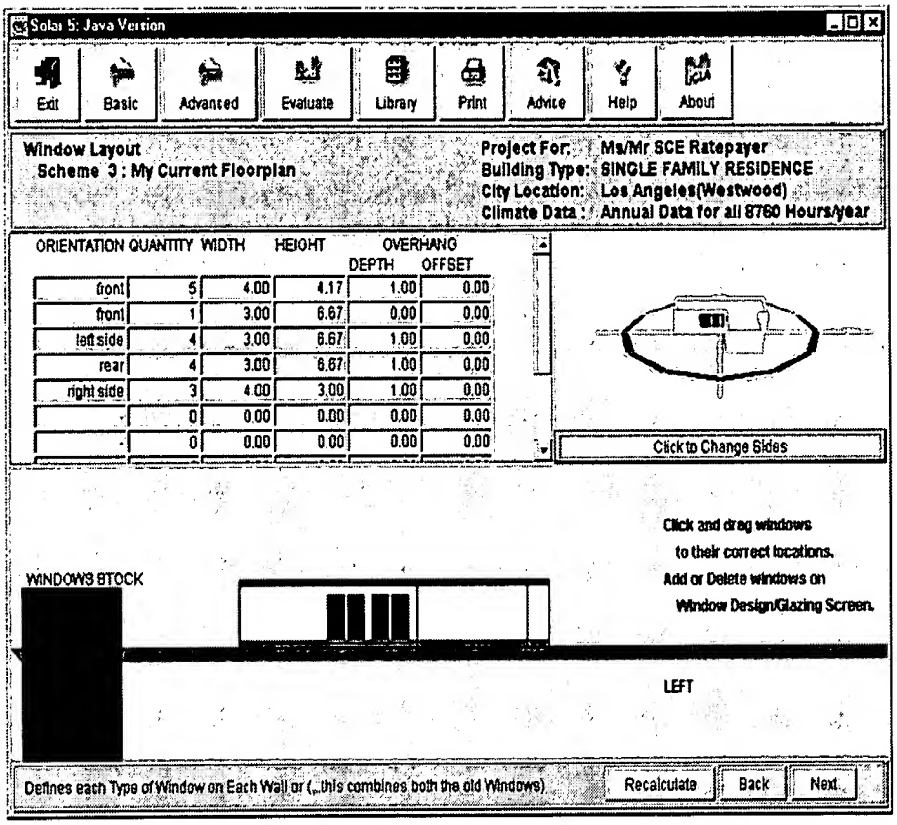

Figure 3: SOLAR-5/HEED Window Layout Screen Shot

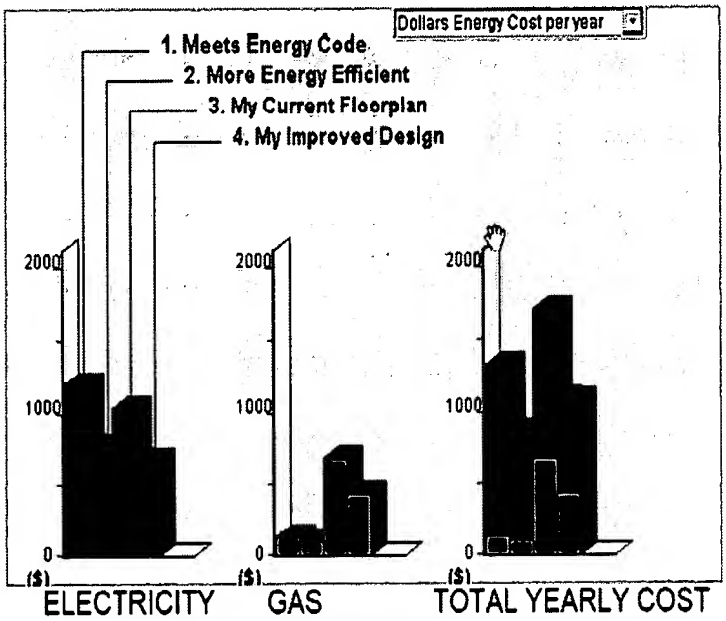

Figure 4 SOLAR-5/HEED Report Screen Shot

- forms the core simulation engine for the Internet based building energy performance evaluation system Residential Energy Efficient Design (REED) wherein REED selects a building design to meet a target energy code (designs a code compliant building; Milne, M. et al., An internet tool for designing energy efficient homes; Abstract); and

- has been benchmarked (compared, validated) to other widely available building performance systems (models) including but not limited to DOE-2 and BLAST using the BESTEST procedure (Energy Design Tools; Milne M. et al., A Drag-and-Drop Energy Design Tool; Page 3, Paragraph 1).

SOLAR-5 does not expressly teach the selection of a set of items (building systems, materials or the like) based on a set of values (cost, performance or the like).

Official notice is taken that it is old and very well known in the art that in the design (engineering) of buildings, new or upgrades, engineers create, analyze and evaluate alternative designs in an iterative design and evaluation process wherein each design alternative includes the variations of a plurality of design parameters (building materials, systems, geometries, costs, etc.) in an effort to select the best design that meets or exceeds the design goals and requirements of the building under design.

Further it is well known in the art that the essence of engineering involves the knowledge of the mathematical and natural sciences gained by study, experience, and practice that are applied with judgment and creativity to develop ways to utilize the

materials and forces of nature for the benefit of mankind. Further it is well known that construction engineers, civil engineers and architects employ very old and very well-known techniques to understand all aspects of designing and constructing a building including decisions related to costs, bills of materials, project management, scheduling, and overall performance.

Official notice is taken that cost engineering and value engineering are well known and commonly used techniques utilized by engineers and architects to insure a project will achieve its design goals in a cost-effective manner. Value engineering can be defined as an organized effort directed at analyzing designed building features, systems, equipment, and materials for the purpose of achieving the essential functions at the lowest lifecycle cost consistent with the required design goals (performance, quality, reliability, cost and safety).

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system, designed to be utilized during the design phase of a construction project as a means for testing and analyzing design alternatives, as taught by SOLAR-5 would have been used to drive the selection of building materials (items) and geometries that met or exceeded the target design goals including but not limited to: building lifecycle costs, energy efficiency, maintainability, code compliance (safety, energy) and a plurality of other project criteria.

SOLAR-5 does not teach the utilization of a database for storing project related information.

ENERGY teaches a system for the evaluation of building energy performance. More specifically ENERGY teaches a design environment providing a means for architects to interactively analyze building design alternatives (Pittman J.H. et al.; Abstract, Page 234, Column 2, Paragraph 1 and 3; Page 240, Column 1, Paragraph 1).

ENERGY further teaches that the building performance evaluation system:

- receives building descriptions and a plurality of other project parameters including but not limited to: building materials (walls, windows, insulation, roofs, air conditioners, furnaces and the like), building geometries (floor plan and window layout), building codes and energy rates (Pittman J.H. et al.; Page 233, Column 2, Paragraph 1; Page 235, Column 1, Paragraph 2);

- calculates (determines, analyzes) the energy performance of the building and its components (Pittman J.H. et al.; Abstract; Pages 238 Column 1, Paragraph 4; Figures 13 and 15);

- provides a means for using a plurality of building performance analysis systems (packages, tools; Pittman J.H. et al.; Page 238, Column 1, Paragraph 4);

- enables the selection of building geometries and components that meet the project criteria (Pittman J.H. et al.; Page 240, Column 1, Paragraphs 1 and 3);

- displays the results of the building energy performance analysis (Pittman J.H. et

- the system's architecture includes of a plurality of databases (libraries) for project, materials and component information (Pittman J.H. et al.; Figures 1, 7 and 12; Pages 234, Column 1, Paragraph 1; Page 234, Column 2, Paragraph 1; Page 235, Column 1, Paragraph 1) as a convenient means for storing, accessing and sharing project related information (Pittman J.H. et al.; Page 235, Column 1, Paragraph 2; Page 236, Column 2, Paragraph 1); and

- comprises a three-tier architecture wherein the three tiers include: databases (libraries), business logic (library, attribute and analysis managers) and a presentation (main page, view page; Pittman J.H. et al.; Page 234, Column 2, Paragraph 1; Figures 1, 2, 7 and 12).

It would have been obvious to one of ordinary skill in the art at the time of the invention that the building performance evaluation system as taught by SOLAR-5 would have benefited from the increased flexibility to store and share project information in view of the databases included in the system for evaluating building performance as taught by ENERGY.

SOLAR-5 is silent on the implementation of SOLAR-5, HEED and REED's system architectures.

ENERGY teaches a building performance evaluation system comprising a three-tier architecture wherein the three tiers include: databases (libraries), business logic

(library, attribute and analysis managers) and a presentation (main page, view page; Pittman J.H. et al.; Page 234, Column 2, Paragraph 1; Figures 1, 2, 7 and 12) and as discussed above.

Official notice is taken that the utilization of three-tier architectures, object-oriented programming languages and Internet technologies was well known in the art at the time of the invention. Further it is well known in the art that a three-tiered system is defined as having a client-server architecture in which the user interface, business logic and data storage are developed and maintained in separate layers (modules) and further wherein computer programs, components or other such devices are categorized as either clients or servers. The client making service requests from another program, the server, which fulfills the requests providing a convenient way to interconnect distributed programs or systems (network). Further it is well known in the art that database systems are commonly built and deployed utilizing client/server or multi-tier architectures. The architecture of such systems being optimized for the sharing of resources and data across distributed systems/networks.

It would have been obvious to one skilled in the art at the time of the invention that the Internet based and object-oriented building performance evaluation system as taught by SOLAR-5 would have benefited from the three-tier database driven architecture of the ENERGY system in view of the teachings of ENERGY the resultant

system being optimized for the sharing of resources and data across distributed systems/networks.

Further it would have been obvious to one skilled in the art at the time of the invention that the Internet enabled building performance evaluation system as taught by SOLAR-5 (REED) would have utilized a network (Internet) to transmit and receive a plurality of project related parameters (structural, design, material, costs, etc.) the Internet providing a convenient means for providing access to a large number of users without requiring those users to install the SOLAR-5 (REED) building performance evaluation system.

Regarding Claims 3-5 and 7 SOLAR-5 teaches the receipt of a plurality of project parameters and the calculation of a plurality on those project parameters including but not limited to: energy consumption and costs, amount of air pollution, heat balance and the like as discussed above. Further SOLAR-5 teaches the use of the building performance evaluation system as part of the standard building design process wherein engineers iterate through design alternatives (combinations of project criteria and information; Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract, Conclusion) thereby determining if the building's design is in compliance with the specified project criteria as discussed above (Milne M. et al., A Drag-and-Drop Energy Design Tool; Section 2.5 Energy Costs, Page 5; Figure 6).

Regarding Claims 8, 9, 35, and 55 SOLAR-5 does not expressly teach the selection or display (presentation) of a set of items (building systems, materials or the like) based on a set of values (lowest cost, performance or the like) as discussed above.

Official notice is taken that value engineering and cost engineering are well known and widely used techniques utilized by engineers and architects for the purpose of achieving the essential functions at the lowest lifecycle cost consistent with required design goals as discussed above. Further it is well known in the art that the value and cost engineering techniques (processes) include the presentation (display) and selection of the specific building design parameters (building materials, systems and geometries) that best achieve the design goals established at the onset of the project.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system, designed to be utilized during the design phase of a construction project as a means for testing and analyzing design alternatives, as taught by SOLAR-5 would have benefited from the ability to display (presentation) and select the building design parameters (building materials (items), systems and geometries) that met or exceeded the target design goals; the design goals including but not limited to the goal of maximizing the buildings value by minimizing the costs associated with constructing and maintaining the building over its lifecycle while achieving the building's performance and functional requirements in the most cost-effective manner possible.

Regarding Claims 10, 36, 46, 67 and 72 SOLAR-5 teaches the use of a plurality of building performance parameters including but not limited to thermal performance parameters as the basis for calculating a plurality of building performance parameters and the impact of those parameters on the buildings overall performance (Pittman J.H. et al.; Abstract; Grewal N.; Abstract).

SOLAR-5 does not expressly teach that one of those parameters is a UA value.

ENERGY teaches the use of a plurality of building performance parameters including but not limited to thermal performance parameters and that one of those parameters is a UA value stored in a database (Grewal N.; Abstract). Further the use of UA values, as a measure of the thermal performance is a well-known means for capturing and communicating the thermal characteristics of building materials or systems.

It would have been obvious to one skilled in the art at the time of the invention that building performance evaluation system as taught by SOLAR-5 would have benefited from the use and determination of UA values in view of the teachings of ENERGY thereby providing a well known means for describing the thermal characteristics of building materials and systems used commonly by architects and engineers.

Regarding Claims 11, 37-39, 48-49, 53, 69 and 73-75 SOLAR-5 teaches the use of a plurality of performance parameters relating to the building materials utilized as part of the building's design including the location, type and size windows (Milne M. et al., A Drag-and-Drop Energy Design Tool; Section 2.4 Window Layout, Page 3; Figure 4).

SOLAR-5 does not expressly teach the specific thermal performance parameters utilized as part of the building performance evaluation system.

ENERGY teaches utilization of a plurality of databases to store project performance parameters as discussed above. ENERGY further teaches the use of a plurality of thermal performance and other relevant information related to the location, size, thermal properties and type of windows utilized as part of the building's design including glazing area (Pittman J.H. et al.; window library; Figure 7; Page 237, Column 2, Paragraph 3; Page 238, Column 1, Paragraph 1). Further the use of glazing areas as one of a plurality of parameters related to the thermal performance of a window is a well-known means for capturing and communicating the thermal characteristics of a window.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system, as taught by SOLAR-5 would have benefited from the use of a plurality of thermal performance parameters relating to

windows used as part of the building's design including the commonly used glazing area for windows in view of the teachings of ENERGY thereby providing a well known means for communicating the thermal performance parameters associated with a window.

Regarding Claims 12 and 56 SOLAR-5 teaches the use of a plurality of thermal performance parameters as discussed. SOLAR-5 further teaches the specification of building components including exterior wall construction and insulation utilized (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figure 5; Page 5, Column 1, Paragraph 3).

SOLAR-5 does not teach the specific thermal parameters associated the building materials (insulation, exterior wall types/construction, etc.). More specifically SOLAR-5 does not teach that one of the plurality of performance parameters is an R-value.

Official notice is taken that there exists a plurality of well known and commonly used parameters for describing the thermal characteristics of building materials and systems as discussed above. More specifically the use of R-value to represent the thermal characteristic of a building material (component or system) is very old and very well known in the art and provides a convenient and well understood means for describing the thermal performance characteristics of building materials.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system as taught by SOLAR-5 would have

benefited from the use of well known building material thermal parameters including but not limited to R-values as a convenient means for describing the thermal characteristics of the building materials being evaluated.

Regarding Claims 15 and 16 SOLAR-5 teaches the specification and use of building codes including the use of building energy codes (Milne M. et al., A Drag-and-Drop Energy Design Tool; Section 2.1 Initial Design, Page 3; Section 2.5 Energy Costs, Page 5; Milne, M. et al., An internet tool for designing energy efficient homes; Abstract).

Regarding Claims 17-20, 25, 26, 50, 51 and 82 SOLAR-5 teaches the specification (inputting, receipt) of a plurality of project parameters including but not limited to: structural information, structural elements, structural configuration, building geometries, mechanical equipment (HVAC, air conditioners, furnaces, etc.) building materials and systems, etc. as discussed above (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figures 1-5; Sections 2.2-2.5, Pages 3-5).

Regarding Claims 21-23 SOLAR-5 teaches a building performance evaluation system which enables users to test building design alternatives as part of their building design, analysis and evaluation processes (cost and value engineering) as discussed above. SOLAR-5 further teaches the specification and calculation of a plurality of project parameters for new construction and/or updating existing building designs (Milne

M. et al., A Drag-and-Drop Energy Design Tool; Figure 1; Page 5, Column 1, Paragraph 5 and Column 2, Paragraphs 1-2; Section 2.7 Help and Advice, Page 6).

Regarding Claim 24 SOLAR-5 teaches the calculation of energy consumption (Architecture + Urban Design, UCLA School of Arts and Architecture Internet Site, Energy Design Tools; Milne M. et al., A Drag-and-Drop Energy Design Tool; Figure 6; Section 2.5 Energy Costs, Page 5).

Regarding Claims 27 and 28 SOLAR-5 does not teach the generation or display of a bill of materials.

Official notice is taken that it is old and very well known that there exists a plurality of means for generating a bill of materials related to a building design and/or construction project. More specifically it is well known that the widely used computer aided design (CAD) systems utilized for the creation of building geometries (schematics, designs) include as part of their core feature set the ability to generate a detailed bill of materials and that the resultant building design (building geometries, building systems and materials) would have been completed as a necessary pre-cursor to utilizing of the building performance evaluation system as taught by SOLAR-5; the CAD systems providing the building parameters required by the building performance evaluation system to specify the building to be evaluated.

It would have been obvious to one skilled in the art at the time of the invention that the designer (user, architect, engineer) utilizing the building performance evaluation system as taught by SOLAR-5 would have benefited from the utilization of a plurality of means for generating a project bill of materials and other require project parameters as a pre-cursor to utilizing the building performance evaluation system thereby simplifying the specification of project parameters.

Regarding Claim 29 and 65 SOLAR-5 teaches providing to the users of the performance evaluation system a plurality of information related to useful Internet sites, 800 numbers, contractors and the like.

SOLAR-5 does not teach the use of a database to store cost or supplier information.

Energy teaches the use of a database to store a plurality of project related information as discussed above.

ENERGY does not expressly teach the inclusion of cost and supplier information in its databases or libraries.

Official notice is taken that there existed at the time of the invention a plurality of means (information sources, electronic marketplaces, referral networks, etc.) for

providing information on the selection of the lowest cost supplier for construction related projects; this information being of value to the users of the system particularly after the final cost-effective building design has been selected.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system, including the system's list of suppliers, contractors and other information related to the completion/execution of the construction project, as taught by SOLAR-5 would have benefited by providing additional information on suppliers, contractors and the like thereby enabling users to select the lowest cost supplier without having to go to an external source of information making the system an end-to-end solution for the users project building evaluation and construction needs.

Regarding Claims 32, 62-64 and 86-87 SOLAR-5 does not teach the inclusion of general project management tools or information such as project scheduling, installation schedules, or the like.

ENERGY teaches the utilization of a database to store a plurality of project related information as discussed above.

ENERGY does not teach the inclusion of general project management tools or information such as project scheduling, installation schedules, or the like.

Official notice is taken that there exists a plurality of systems, methods, tools and techniques for managing construction and building projects that are all old and very well known in the art. Such project management systems providing a means for managing a construction project and insuring its successful completion.

Further it is old and well known that project management can be defined as application of knowledge, skills, tools and techniques to a broad range of activities to meet the requirements of the particular project. Project management knowledge and practices are best described in terms of their component processes. These processes can be placed into five process groups (initiating, planning, executing, controlling and closing) and nine knowledge areas (project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management and project procurement

It would have been obvious to one skilled in the art at the time of the invention that the building construction project would have benefited from the application of well known and widely practiced project management techniques, including but not limited to management of all phases of the construction project from design to build, and further that the building performance evaluation system as taught by SOLAR-5 would benefited from providing valuable project information utilized by the individuals and/or systems managing the overall construction project including but not limited to: bill of materials,

Regarding Claim 34, 47 and 68 SOLAR-5 teaches a building performance evaluation system wherein the building's structure; building materials and systems as well as their associated parameters are specified as discussed above.

SOLAR-5 does not expressly teach that one of the building project parameters includes the individual or total costs associated with the building materials and/or systems being evaluated.

Official notice is taken that value and cost engineering techniques are well known and widely utilized by engineers and architects for the purpose of achieving the essential functions at the lowest lifecycle cost consistent with required design goals as discussed above. Further it is well known that by including the costs (individual and total) associated with the building design being evaluated provides a more complete and accurate means for evaluating alternative designs relative to their overall value.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system, designed to be utilized during the design phase of a construction project as a means for testing and analyzing design alternatives, as taught by SOLAR-5 would have benefited from the inclusion of information related to the costs (individual and total) of building components (materials and systems) being evaluated thereby insuring that the architect or engineer evaluating

the overall value of a particular building design would have all of the information necessary to properly evaluate and eventually select the building design with the highest possible overall value.

Regarding Claims 40, 41, 52, 54, 55 and 76 SOLAR-5 teaches the specification of a plurality of project related parameters including climate control equipment (air conditioners, furnaces, etc.) as discussed above. SOLAR-5 further teaches the calculation of energy consumption and other build performance related information based on the building parameters as part of the iterative building design and evaluation process wherein the lowest cost building design (materials, systems, geometries, etc.) is selected as discussed above.

SOLAR-5 does not teach the use of a database to store project related information or the specific use of UA as a thermal performance parameter as discussed above.

ENERGY teaches a the for evaluating the energy performance of a building wherein the system's architecture includes of a plurality of databases (libraries) for project, materials and component information as discussed above. ENERGY further teaches the calculation of energy consumption and a plurality of building performance related information based on a plurality of project parameters (attributes; Pittman J.H. et al.; Page 238, Column 2, Paragraph 2) as discussed above. ENERGY teaches the use

of a plurality of thermal performance values and that one of those values is a UA value (Grewal N.; Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention that the building performance evaluation system, wherein building performance data is determined and presented based on the building's specification, as taught by SOLAR-5 would have benefited from the increased flexibility to store and share project information in view of the databases included as part of the system for evaluating building performance taught by ENERGY.

Further it would have been obvious to one skilled in the art at the time of the invention that the system for evaluating building performance, which included the use and determination of a plurality of thermal performance parameters, as taught by SOLAR-5 would have included the use and determination of UA values in view of the teachings of ENERGY thereby providing a well known thermal performance parameters used commonly by architects and engineers.

Regarding Claim 57 and 83 SOLAR-5 teaches the calculation of a plurality of building performance parameters including an energy baseline level and energy budget as a means for determining (selecting) the most appropriate building design including but not limited to the amount and type of insulation, systems and geometries insuring

Regarding Claims 59 and 89 SOLAR-5 teaches the specification of a plurality of project parameters (building geometries, materials, systems, etc.) as discussed above (Milne M. et al., A Drag-and-Drop Energy Design Tool; Figures 1-5; Sections 2.2-2.5, Pages 3-5). Further SOLAR-5 teaches the utilization of Internet technologies (REED) and well known object-oriented programming languages Java and C++ (HEED) as discussed above.

Official notice is taken that it is old and very well known that Internet enabled systems transmit and receive information in the form of electronic documents (HTML, XML, etc.) over a computer network which typically involve a plurality of client and server computers.

Further official notice is taken that there exists a plurality of means for receiving project related information including the use of computer aided design (CAD) systems utilized for the creation of building designs (schematics) as discussed above. CAD systems commonly include the ability to export project related information (electronic document) as a means for sharing information amongst the various systems (tools) utilized by engineers and architects during the design and construction of buildings.

It would have been obvious to one skilled in the art at the time of the invention that the designer (user, architect, engineer) utilizing the building performance evaluation system as taught by SOLAR-5 would have benefited from the utilization of a plurality of [illegible] sharing building project parameters with a plurality of users

and/or systems utilized as part of the iterative building design process thereby simplifying communications amongst the plurality of systems and users involved in the design process.

Regarding Claim 60, 70 and 79 SOLAR-5 teaches a means for reviewing and updating building project parameters (Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Figures 1-3, and 6) as part building evaluation and design process as discussed above.

SOLAR-5 does not expressly teach the periodically updating cost or other project related parameters (information).

Official notice is taken that it would have been well known in the art that project information is dynamic and evolves as the project progresses. Further it is old and well known in the art that it is essential for accurate design and evaluation of alternative designs that the latest and most accurate information be included as part of the building design selection process thereby insuring that the engineer makes the best and most informed decision possible. Further it would have been obvious to one skilled in the art at the time of the invention that any system utilized as part of the building design and selection process would have needed the ability to periodically accept updates to any number of the plurality of project parameters insuring the system would provide up-to-date and accurate design evaluations.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system as taught by SOLAR-5 would have benefited from having the ability to periodically accepts updates to any number of the plurality of project parameters thereby insuring the system contained the most up-to-date and accurate project information possible thereby insuring that the building's performance evaluation would be accurate and up-to-date.

Regarding Claim 80 SOLAR-5 teaches that the project criteria include an energy budget (Milne M. et al., A Drag-and-Drop Energy Design Tool; Section 2.5 Energy Cost, Page 5).

Regarding Claim 81 SOLAR-5 teaches that the project parameters (criteria) include an energy baseline level (Milne M. et al., A Drag-and-Drop Energy Design Tool; Page 5, Column 1, Paragraph 3).

Regarding Claims 84 and 85 SOLAR-5 teaches that the building performance evaluation system enables users to test various designs and make energy efficient building design decisions based on a plurality of building geometry and materials, weather, energy costs and building material interactions parameters (variables; Milne M. et al., A Drag-and-Drop Energy Design Tool; Abstract; Introduction).

Regarding Claim 88 SOLAR-5 does not teach the charging of fees for the utilization of the building performance system.

ENERGY teaches the system for evaluating building performance was developed for the architecture profession (Pittman J.H. et al.; Abstract).

ENERGY does not teach the charging of fees for the utilization of the building performance system.

Official notice is taken that it is old and very well known in the art of architecture and engineering that professionals provide services to clients for a fee and that in the performance of those services leverage their training, knowledge and a plurality of systems and tools; such tools providing productivity gains relating to the services being performed.

It would have been obvious to one skilled in the art at the time of the invention that the building performance evaluation system as taught by SOLAR-5 would have been utilized by professions in the architecture field as taught by ENERGY and further that those professionals would have charged a fee for services rendered utilizing the SOLAR-5 building performance evaluation system and in doing so being compensated

Regarding Claim 92 SOLAR-5 teaches the comparison of the building's actual and simulated energy performance (Milne M. et al., A Drag-and-Drop Energy Design Tool: Abstract; Page 6, Column 2, Paragraph 2).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Burns et al., U.S. Patent No. 5,189,606, teach a cost management and analysis system wherein knowledge-bases, including building codes and regulations, enable the system to estimate, analyze and report on the lifecycle costs of buildings.

- Horrie, Kazuhiko, U.S. Patent No. 5,546,564, teaches a system for estimating construction costs of buildings having desired factors (project criteria).

- Subbarao, Krishnappa, U.S. Patent No. 6,134,511, teaches the use of simulation tools to determine the energy performance of buildings and in the design of energy-efficient buildings giving examples of specific tools utilized for such simulations BLAST and DOE-2. Subbarao further teaches the calibration of building energy simulations.

- Kurtzberg et al., U.S. Patent No. 5,822,719, teach a system for selecting items utilizing criteria. More specifically Kurtzberg et al. teach a method for solving performance constrained component selection problems.

- Crawley, Drury B. et al., EnergyPlus: Energy Simulation Program, teach the use and development of EnergyPlus a building performance simulation system which utilizes an iterative method to determine the performance of a building and further includes user-configurable HVAC systems, window/glass simulations (conventional,

quality). Crawley et al. teach the comparison of several building performance simulation systems including DOE-2, BLAST, IBLAST and EnergyPlus.

- Crawley Drury B. et al., EnergyPlus, A New-Generation Building Energy Simulation Program, teach a building performance evaluation system wherein integrated and simultaneous simulations can be performance, the modeling of building components as objects and the comparison of several building performance simulation tools.

- Crawley Drury B. et al., EnergyPlus: Creating a New-Generation Building Energy Simulation Program, teach the development and use of a building energy simulation tool, EnergyPlus available in 1999 and as shown below, as an evolution of over 20 years of research and development by the U.S. Government of BLAST and DOE-2 (building performance simulation tools). Crawley et al. further teaches that the EnergyPlus building simulation tools accepts building design and material descriptions and generates building performance results.

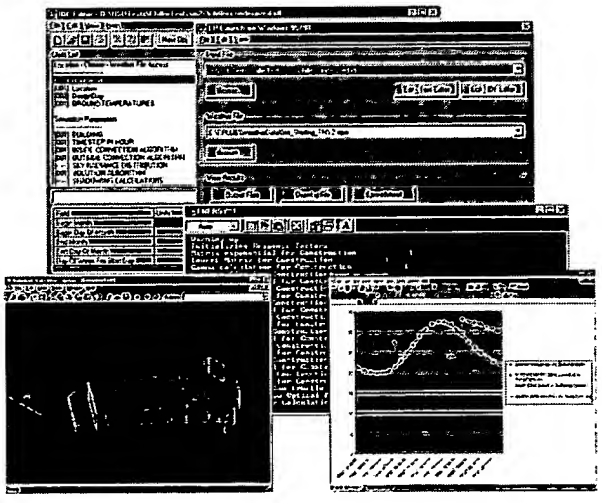

Figure 5: EnergyPlus Screen Shots

- Bosch, Maria B., An expert system for cost-effective energy efficiency calculations, teaches a system for calculating the performance of a building and providing recommendations on the most cost-effective use of building components. Bosch further teaches a system which accepts building components including windows (glass), ceiling, walls, air conditioning, insulation R-values, etc. and compares the energy performance of the described building against building energy codes thereby providing recommended selections of the most appropriate and cost-effective building materials to improve the builders ability to meet building code requirements.

- Bazjanac V. et al., The Implementation of Industry Foundation Classes in Simulation Tools for the Building Industry, teach the development and availability of interoperability standards for systems in the architecture, engineering, construction and facilities managements industries enabling systems, including building simulation tools, to share information and data seamlessly.

- U.S. Department of Energy's Energy Efficiency and Renewable Energy Building Technologies Program - Bibliography 1996-2000, teaches a plurality of papers and articles related to building performance simulation tools.

- Building Energy Software - Tools Directory, teaches the availability of a plurality of software tools for building performance simulations including tools for whole-building analysis, codes and standards, materials, components, equipment and systems.

- The Buildings Group:: Hot2000, teaches a system from modeling the performance of buildings as a means for evaluating building designs. The article further teaches the use of the Hot2000 system for new or renovation building projects to insure such projects meet energy regulations and for calculating fuel consumption costs, effective R-values of building components and investment/improvement options.

- Dickinson S.J. et al., Genetic Algorithm Optimisation and Scheduling for Building Heating Systems, teach the application of genetic algorithms in the analysis and simulation of a wide range of dynamic physical systems including building heating systems.

- IMAGE: A simulation-based tool for the appraisal of advanced glazing teaches a system for determining the impact of various glazing components on the overall performance of buildings.

- Builders checking out tools for energy compliance teaches two suites of widely used software products (tools) that provide a means for builders to insure their buildings meet building codes: MECheck and COMcheck.

- A/E/C/ Systems 2000: A dot-com extravaganza teaches the plurality of construction industry related Internet marketplaces for facilitating all aspects of the design, development, construction and maintenance of construction projects.

- Primavera.com Product & Solutions teaches a suite of software products for use in the management of construction projects including but not limited to tools for cost estimation, scheduling, reporting, and the like.

- Coello Carlos A., An Updated Survey of GA-Based Multiobjective Optimization Techniques, teaches several well-known methods for solving multiobjective (multicriteria, multiperformance or vector) optimization problems wherein a set of items, each described with cost and other related information, are selected in order to meet specified criteria.

- Dell'Isola A., Value Engineering: Practical Applications for Design, Construction, Maintenance & Operations teaches the well-known and widely used value engineering methods, tools and techniques as applied to the building industry.

- Querns W.R., A way to handle energy costs in value engineering studies, teaches the importance of energy costs as drivers in the selection of the highest-value building design alternatives. Querns W.R. further teaches bill HR133 which requires the application of value engineering in all federal agencies to reduce operating costs, improve the quality of services and optimize costs of construction programs. Querns W.R. teaches that value engineering includes cost evaluation of design alternatives utilizing according to various criteria and that a detailed analysis of building materials is conducted to insure material selection recommendations can be made.

- Finlayson E.U. et al., Window 4.0 Documentation of Calculation Procedures, teach the calculation procedures utilized by the Window 4.0 system for calculating total window thermal performance indices (U-values, solar heat gain coefficients, shading coefficients, glazing, and visible transmittances). Finlayson E.U. et al. teach that Window 4.0 provides a heat transfer analysis method consistent with the rating procedure developed by the National Fenestration Rating Council (NFRC). Finlayson

E.U. et al. further teach that the Window 4.0 system can be used to design and develop new products and to help public officials in developing building energy codes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (703) 306-5679. The examiner can normally be reached on 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJ
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